

NATIONAL DEFENSE UNIVERSITY

NATIONAL WAR COLLEGE

To Fetch a Pail of Water: Can the U.S. Help the World Avert a Water Scarcity Tumble?

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5603

The National Security Strategy Process

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Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 2003		2. REPORT TYPE		3. DATES COVERED 00-00-2003 to 00-00-2003	
4. TITLE AND SUBTITLE To Fetch a Pail of Water: Can the U.S. Help the World Avert a Water Scarcity Tumble?				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) National War College, 300 5th Avenue, Fort Lesley J. McNair, Washington, DC, 20319-6000				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES The original document contains color images.					
14. ABSTRACT see report					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES 17	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

To Fetch a Pail of Water: Can the U.S. Help the World Avert a Water Scarcity Tumble?

Quite a few Americans lie awake at night, worried about terrorism, wondering where al-Qaeda might next strike. And they reach for a glass of water on the nightstand, to relieve a dry throat brought on by uncertain fears. But if Osama is a real enough bogeyman, his terror pales in comparison to a scenario that few Americans contemplate: what, if in reaching for that glass of water, there was no water to be had? In going about their daily lives Americans think little about the water they drink, cook with, or use to water their lawns. The occasional story of drought in the West, of shriveled crops, of water rationing in the East make barely a dent on the national consciousness. Water seems a given, flowing from the tap, swirling down the drain. Here then a cold bucket of water to rouse Americans from their complacency: within a generation's time nearly half the world's people could face water scarcity and the U.S. government has no national strategy in place to deal with the readily identifiable *causes* of this potential crisis.

In a series of January 2003 conversations, several key players in the federal bureaucracy charged with formulating U.S. water policy made clear that the inter-agency decision-making process is, to date, focused only on the immediate *consequences* of water scarcity. Differing bureaucratic preferences and competing priorities, especially between but also within the Departments of Interior and State, was producing only partial, shortsighted policies lacking long-term strategic vision. The issue at hand is how to make and move through the bureaucracy a forward looking and comprehensive policy that balances U.S. domestic interests with foreign policy goals, while seriously addressing the causes of water scarcity. All agreed that it is in the national interest to focus on water scarcity as a strategic necessity and looked to the White House to provide the call to action.

A Drop in the Bucket...

The Earth is awash in water; stand and gaze out over the ocean and the very idea of water scarcity seems inconceivable. Approximately 70% of the planet's surface is covered in water, with the oceans, land and atmosphere holding the equivalent of 1.4 billion cubic kilometers of liquid water. But the reality is illusory. Most of it – nearly 97% - is salty and unfit for human use. Of what remains, more than 2% is locked up in glaciers and the ice caps. Barely one percent is fresh water of the kind necessary to sustain human life and activity.¹ The 0.008 of all the water on earth that is renewable freshwater amounts to 110,300 cubic kilometers and nearly two-thirds of that water returns to the atmosphere through evaporation or transpiration. Just over a third – about 40,000 cubic kilometers per year – remains as the runoff that flows from land to sea through rivers, streams and underground aquifers. It is this relatively tiny amount that all humans must draw on for household use, irrigation, industry, and power generation.²

...Insufficient to Meet a Quickening Thirst...

Sandra Postel has studied water scarcity since 1983 and writes that while the “freshwater supply is renewable, it is also finite. The quantity available today is the same that was available when civilizations first arose...and so the amount of water...allocated to each person has declined steadily with time [as the population increases].”³ With the world's population growing at a yearly rate of 85 million people, water consumption doubles every twenty years, especially in the burgeoning urban megalopolises of the developing world.⁴ Yet, as cities place increasing demands on water resources, world agriculture – whose irrigation requirements account for an estimated 72 percent of world water use – will need to “increase output of irrigated food by more than 80 percent to meet developing nations' demand by 2030.”⁵ A 2002 United Nations report grimly concludes: “half of the world's rivers are seriously depleted and polluted and a third of

mankind dependent on groundwater whose levels are falling. By 2032 half the world's population will face water shortages.”⁶

...Or Forestall a Gathering Storm?

Water crosses international borders; downstream states are dependent on upstream supplies controlled by other nations. Underground aquifers know no borders but as one nation draws down supply, neighboring states voice concern. A 1998 report headlined “Water Lies at Heart of Mideast Land Fight” made clear that whatever the outcome of Israeli-Palestinian negotiations, Israel will maintain control of water resources, a stance not acceptable to Palestinians, then or now.⁷ In Turkey, the Grand Anatolian Project (GAP) promises irrigation to Turkey's parched and economically neglected southeast by damming the Tigris and Euphrates, but raises alarms in Syria and Iraq downstream.⁸ Ten nations draw water from the Nile River and Egypt - the region's largest and strongest state but also last in line – remains very sensitive to any efforts to reduce the supply, indicating a willingness to use force to prevent such action.⁹ Small wonder then that UN Secretary General Kofi Annan warned in December 2002 of “grave consequences, [including to] stability itself” if the world's governments did not address the issue of freshwater scarcity.¹⁰

Ripples in a Pond of Complacency

The U.S. has taken action when an international dispute over water scarcity potentially impacts U.S. national security. It took a lead role in brokering water rights discussions between the Israelis and Palestinians in the aftermath of the Oslo Accords, talks it has kept afloat through the fits and starts of the Middle East peace process. In Central Asia, the U.S. encouraged regional discussions over the future of the degraded freshwater Aral Sea, offering technical expertise and aid in a bid to foster stability and cooperation between the Central Asian states

(and guarantee access to the region's oil).¹¹ Closer to home, the U.S. and Mexico are currently locked in a dispute over Mexico's failure to deliver billions of gallons of water drawn from the Rio Grande and owed to the U.S. under a 1944 treaty, leading to potential crop and business failures in Texas, home state to the current occupant of the White House.¹²

Like a desert's creeping edge, water scarcity advances within U.S. borders. The Federal Government told California, dependent for growth and development on dams and vast irrigation schemes, that having failed to meet a deadline for its plan to continue taking water from the Colorado River, it would have to reduce the amount of water it draws. Interior Secretary Norton warned in December 2002: "we no longer have abundant surpluses and full reservoirs....The era of limits is upon us. The future of the Colorado River will be shaped by drought and population growth."¹³ In the relatively water blessed U.S. Southeast, growing Atlanta (and the state of Georgia) today argue with Florida over the flows of the Chattahoochee and Apalachicola rivers, a "sign of future clashes around the country over an increasingly limited supply of fresh water."¹⁴

Looking at a Glass Half Full

Clashes are not, however, inevitable, either at home or overseas. Solutions are at hand. In her book *Pillar of Sand*, Postel posits several ways to improve water productivity, including developing irrigation practices that allow farmers to get a bigger harvest from the same amount of water ("more crop for the drop").¹⁵ Improving irrigation practice seems to promise the most bang for the buck, as opposed to other means such as capturing more fresh water before it runs off to the sea (i.e., damming). Irrigation, which consumes the most water, is critical to food productivity, and solutions for wasteful practices can be found through conservation and better technology, usually without harm to the environment. Drip irrigation, for example, delivers water directly to the roots of individual plants, cutting evaporation and increasing crop yield.

Recycling drainage water also improves water productivity.¹⁶ Drip irrigation is more costly than traditional center pivot irrigation but Postel and others argue that the technology is improving and that pricing is increasingly competitive.

Key to planning is determining first and as a priority where and how much water is being used and for what purpose. Water use data is inaccurate, even in developed nations, and abysmal in the developing world, leading to incorrect (and dire) assumptions about long-term water consumption. When water use is accurately monitored, as through pricing mechanisms, efficiencies result. Both the U.S. and Europe have achieved substantial reductions in water consumption as a result of such efficiencies and at least one expert argues that “factoring efficiency gains and conservation into a global water forecast...total water demand in 2025 need not greatly exceed today’s.”¹⁷ Improving irrigation practices and managing water demand could stabilize world water supplies and help reduce the potential for conflict.

The world community must be “encourage[d] to develop an international body of laws concerning water resources that would be capable of gaining universal acceptance and practice.”¹⁸ Given the American strategic preference for global economic growth and stability, “it is in the best interest of the United States, [as well as] other donor nations, multinational groups, and non-governmental organizations (NGOs) to promote technologies and policies with the potential to reduce...water resource scarcity.”¹⁹ Agreement would have to be reached on more equitable distribution of available water, especially among those nations that must share the water from the 261 rivers that cross international borders. As it stands today, however, there is still “no consensus among states as to how far they may exercise authority over water resources on their territory without having to bear the interests and rights of other states in mind.”²⁰

Time to Take The Plunge...

Aaron A. Salzberg (Ph.D.) has been with the U.S. State Department's Bureau of Oceans, International Environmental & Scientific Affairs (OES) for the past four-and-a-half years. Holding the title of "Strategic Planner" in OES's Office of Policy Coordination and Initiatives, Mr. Salzberg has worked diligently to force USG attention and action on water scarcity issues, an effort he discussed January 3, 2003 in his office.²¹

Despite the strategic importance of water and growing realization that its scarcity poses significant risk to international stability, the USG has been slow to react comprehensively and with long-term vision. Salzberg describes a USG decision process that still struggles to define the problem. For example, is water scarcity an issue of potential conflict and instability arising out of access to water? Or is it one of inadequate distribution, requiring improved infrastructure? In framing a complex issue, the potential impact on U.S. national interests (regional stability, economic growth and the health of U.S. citizens) drives what Salzberg sees as a potential sea change in USG thinking, most importantly at the National Security Council (NSC). The NSC, which directs and integrates policy-making for the USG and is presumed to speak authoritatively for the President, expressed the view in early 2001 that water scarcity would be the next "marquee issue." Salzberg seized on that statement as a potentially action-forcing development that could jumpstart the USG bureaucracy.

...But Bring a Life Preserver

Were that it were so simple. While the NSC can express a wish, it often lacks technical competency on a given issue – as is the case with water scarcity – and so relies on the bureaucracy to move policy forward. But when the NSC in 2001 asked agencies with expertise on water scarcity – the U.S. Agency for International Development (USAID), the Department of the Interior, the U.S. Geologic Survey (USGS), the Environmental Protection Agency (EPA), the

State Department's OES – for a plan that encompassed a strategic government-wide vision on how to address international water scarcity, it found not only no plan, but no plan for a plan. Frustrated by bureaucratic inertia, the NSC put water scarcity on the White House back burner, where it sits today, despite its policy significance and marquee value. Why?

First, the two players identified by Salzberg as key to crafting a comprehensive water scarcity strategy act, if unwittingly, to undermine the process. One is the NSC itself. Salzberg observes, for example, that an USG-funded well that brings up groundwater in an African village provides instant gratification and so “success” in alleviating water scarcity. But the USG must also train an individual to maintain the well, requiring both a long-term perspective and, as importantly, more money for training. Neither accords with the NSC's bureaucratic preference for results immediate, tangible and preferably inexpensive. With the NSC reluctant to lobby Congress hard to fund developmental “tree hugging” enterprises, the bureaucracies are left doubtful of NSC commitment.

Salzberg identified USAID as the other key player on water scarcity. Its decentralized “culture” is antithetical to strategic planning, however. USAID's preference is to permit individual overseas mission directors to decide how to prioritize and spend development and assistance monies. Some directors may choose to spend limited resources on water scarcity, others may not, influenced as well by the priorities of the host government. Salzberg describes USAID as turf conscious, unwilling to cede influence to other agencies on matters it deems related to development, its traditional fiefdom.

State/OES moved into what it sees as a bureaucratic vacuum on water scarcity, seeking to raise its own profile, carving out a niche assisting the negotiation of transboundary water disputes, a species of conflict resolution natural to its own bureaucratic culture. In doing so, it

seeks to move other agencies – particularly USAID - in the direction of thinking comprehensively on the broader issue of water scarcity. State cultivated USAID at senior levels, who signed off an OES-led March 2001 initiative to address “Water and Security” by bringing together several nations and 20+ U.S. agencies to tackle transboundary water issues, including at the technical level, normally USAID’s domain.

But State, too, is the victim both of an ingrown culture, as well as short-term thinking. Salzberg works in OES, a “functional bureau” within State. The “functionals” are traditionally lower in State’s pecking order than the “geographic bureaus,” such as European Affairs (EUR). OES must first convince EUR and the other geographic bureaus that water scarcity is a “serious” issue of geo-political import. Even when successful there and money made available, Salzberg and OES labor to overcome traditional internal State biases. For example, State administers a USG initiative that makes available \$970 million dollars over three years to a UN safe drinking water program. Rather than think globally, State earmarked 70% of the funds for just three nations, all in the Middle East, water scarcity subsumed to “more important” strategic interests.

Salzberg mused that to move the USG towards a comprehensive, strategic vision and plan would require “a Presidential Task Force.” It would appeal to conservative elements both in and out of government who recognized the *realpolitik* potential danger to regional stability posed by water scarcity, as well as the more liberal, who would see the initiative as based on humanitarian concern. With a commitment issuing from the White House, USAID (and other agencies, including USGS, EPA and the Army Corps of Engineers) would seriously engage. Salzberg added that U.S. business interests would have a keen interest as well. He noted that one firm, a well-known manufacturer of irrigation technology, had low cost systems available for distribution around the world; official U.S. support and visible commitment would provide it

better entrée to needy countries. While unstated by Salzberg, both U.S. business interests and media pressure might possibly be employed to galvanize the White House to action.

Parting the Waters

In a January 7, 2003 meeting in his Reston office, Robert Hirsch, Associate Director for Water at the USGS, listed several key water scarcity issues in which the U.S. could play a broker's role, particularly where strife over water was possible, as on the divided island of Cyprus.²² Depleted aquifers in China and South Asia and salinity worldwide were also key concerns. Each of these issues actually provided opportunities for international cooperation and the U.S. had the wherewithal to help build technical expertise, capacity and infrastructure.

In addition to his own agency (whose parent is Interior), Hirsch identifies the Army Corps of Engineers, the National Ocean and Atmospheric Administration (NOAA), the Department of Agriculture, EPA, Interior's Bureau of Reclamation, and State's OES as key players on international water policy. In what may be a bit of bureaucratic turf protection, Hirsch minimizes USAID's role and technical expertise. He suggests that private and public sectors should work more closely on issues of water scarcity, with the former supplying capital and the latter intellectual expertise. It is a partnership that could dampen potential opposition from the U.S. business sector, which might otherwise view government involvement in water scarcity as intrusive, regulatory and competitive.

Hirsch describes an inter-agency process that is generally collegial, based on the free exchange of scientific and technical information. However, the sharing of information that underlies USGS' bureaucratic culture can sometimes bring it into conflict with, for example, State's preference for close-holding information. In the post- 9/11 atmosphere, moreover, there is clear reluctance to share data (such as dam blueprints) that had been freely circulated in the

past. If USGS has another cultural bias it is that it is reluctant to move forward until a problem is fully understood; this need to slowly accumulate data can frustrate other agencies seeking more immediate action.

Budgets play a role in agency decision-making. Interior, for example, has competing domestic priorities and is sometimes reluctant to permit its constituent bureaus to spend limited funds on “foreign” projects. Each agency must also satisfy the interests of both Congress and the Office of Management and Budget (OMB) whose “balkanized” sub-committees and offices sometimes limit options. Hirsch agreed that White House involvement is critical to animating the inter-agency process; without it bureaucratic inertia and turf protection hinders effectiveness. He notes, for example, that on a specific water initiative, the White House might name co-chairs - one for technical issues, another on policy matters - in order to salve bureaucratic egos. Key is to have the White House – most logically its Office of Science and Technology Policy - actively engage to part the sea of inertia occasioned by competing bureaucratic interests.

Hirsch’s USGS colleague, Verne Schneider (Chief, International Water Resources Branch), adds his view that if the U.S. cannot lead the world to an international consensus on water scarcity, it could enhance stability by brokering water-sharing deals between regional powers, offering its unmatched technical expertise.²³ He also suggests that the Department of Commerce and the Trade and Development Agency (TDA) market U.S. private sector capabilities in tackling the distribution and irrigation aspects of water scarcity.

International Law All Wet?

Assistant Secretary of the Interior for Water and Science Bennett Raley had early the week of January 6, 2003 signed an order cutting off 20% of the water California draws from the Colorado River, enforcing well-established U.S. domestic water law and policy. In contrast, he

suggested in a January 8, 2003 discussion in his office, was international law and practice, which lacks a credible legal enforcement mechanism. This explains the reluctance of the U.S. – or any state – to enter into obligations that restrict use of water, an element of national wealth.²⁴

Moreover, water policy, certainly domestically and he suspects internationally, is inherently local or regional and has always to be considered along four quadrants: the scientific, political, historical and legal. The first and fourth are objective; the historical and political are often subjective but equally important to shaping water policy as, for example, in Egypt or Israel. Vast differences in historical and political perspective around the globe almost certainly would render a global “policy” so general as to be virtually useless.

However, Raley allows, the U.S. has a national interest in promoting stability around the world and should facilitate cooperation abroad on water scarcity. The lead agency should be the State Department, assisted where required by other agencies with technical expertise, including Interior’s, especially USGS and Reclamation, as well as the Department of Defense’s Army Corps of Engineers. Interior and State work together often and usually well on matters relating to bilateral national water commissions established with Canada (International Joint Commission) and Mexico (International Boundary Commission). Raley admits, however, that Interior does exercise some caution in its dealings with State, given that Interior’s own domestic constituency – largely the 17 western U.S. states – distrusted State as liable to give away too much water to Mexico, particularly as a trade off for other interests (e.g., a Mexican vote on a wholly unrelated UN Security Council issue).

Candid in his assessment that ideology played a part in policy-making, Raley dismisses the previous administration’s view that water management (as through dams) is somehow “evil.” Water is a strategic asset and should be treated as such, a clear-eyed, rational view that should be

adopted by the USG when it assists other nations manage water allocation and distribution. The USG, through State, should first seek to understand the relationships between countries in conflict over water, then use its technical expertise to monitor use, and then make the fiscal decision to help or not (hence, the Department of the Treasury – and Congress – also have roles). Smiling, Raley praises his subordinates at USGS and Reclamation as well-intentioned and extremely capable scientists. They have no role, however, in policy-making.

While not at liberty to discuss what White House policy priorities might be, Raley thought that as a general matter White House interest in water policy would ensure that “all were interested.” NGO’s and private business seeking to influence policy-makers were also part of the process, but Raley did not give them significant weight.

Is There A Bridge Over Troubled Water?

Aaron Wolf and others argue convincingly that while water scarcity can be a source of conflict, history shows that it more likely leads to enhanced cooperation because, in the last analysis, water is so vital that it necessitates rational behavior.²⁵ Indeed, through agreements such as the UN’s 1997 Convention on the Law of the Non-Navigational Uses of International Watercourses, the world has sought to establish accepted norms on the sharing of water.²⁶ But the U.S. itself will not likely take that route to addressing water scarcity, given its reluctance to ascribe to multilateral treaties that proscribe U.S. freedom of action. As the world enters into 2003, the UN’s “International Year of Freshwater,” another road must be found.

A Chinese proverb suggests, “when drinking water, think of its source.” Good people within the U.S. government think every day about the problem of water scarcity and what it may mean for national security. But the decision-making apparatus of the USG – the inter-agency process – is at sea as to what constitutes appropriate water policy, especially in the international

context. There are many players – State, Interior (and its constituent bureaus of USGS, Reclamation, NOAA), USAID, Congress, the private sector - who have legitimate roles but there is no consensus among or within agencies as to what those roles entail. If there is agreement in anything, it is that a decision to engage must start with the White House, the key actor.

The preferences of the two chief cabinet-level players, State and Interior, are somewhat at odds, despite Interior's apparent willingness to defer to State on the international stage. State's preference for the long-term, multilateral strategic plan clashes with Interior's preference for the more immediate, bilateral solution. Interior's constituency is domestic, conservative and suspicious if not dismissive of the reliability of international agreement. But Interior clearly cannot be ignored because it has power residing in the technical expertise of USGS and its other arms. State's power lies in its stature as the nation's chief international negotiator, but in terms of expertise on the technical side of water scarcity, OES's Salzberg is the sole voice, whereas USGS alone has literally dozens of water experts.

The distinct bureaucratic cultures shared, nonetheless, a hope and trust that human ingenuity could solve water scarcity, once the complexity and scope of the problem was fully appreciated by policy-makers. If the U.S. was not going to lead the world through international accord, the U.S. could indirectly achieve much the same result by brokering bilateral agreements between regional powers. The U.S. has the experience, know how and prestige to lead the world to the fountain. All it will take, said the USGS's Schneider, a man who has devoted 34 years of his life to solving water scarcity, is a wake-up call.

NOTES

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- ² Sandra Postel, "Dividing the Waters," Technology Review, v100, Issue 3, (April 1997): 55. Academic Search Elite, EBSCO Host (4 December 2002).
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- ⁹ Peter H. Gleick, "Water and Conflict: Fresh Water Resources and International Security," International Security, v18, no.1 (Summer 1993): 86.
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- ¹⁵ Sandra Postel. Pillar of Sand (New York, N.Y.: W*W*Norton & Company, 1999), p. 168-169.
- ¹⁶ Postel, 172.
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- ¹⁸ Kent Hughes Butts, "The Strategic Importance of Water," Parameters, v27, no. 1 (Spring 1997): 80
- ¹⁹ Butts, 79.
- ²⁰ Helga Haftendorn, "Water and International Conflict," Third World Quarterly, v21, no.1 (2000): 66.

²¹ Aaron Salzberg, Strategic Planner, Department of State, Bureau of Oceans, International Environmental and Scientific Affairs, discussion with author. January 3, 2003.

²² Robert Hirsch, Associate Director for Water, United States Geologic Survey, discussion with author. January 7, 2003.

²³ Verne Schneider, Chief, International Water Resources Branch, United States Geologic Survey, discussion with author. January 7, 2003.

²⁴ Bennett Raley, Assistant Secretary of the Department of the Interior for Water and Science, discussion with author. January 8, 2003.

²⁵ Aaron Wolf, "Conflict and Cooperation Along International Waterways," Water Policy, v1 (1998): 251.

²⁶ Gleick, 106.

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